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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* TERRY R. LEE

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Appeal 2008-005224  
Application 09/887,021  
Technology Center 2100

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Decided:<sup>1</sup> July 6, 2009

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Before JOSEPH L. DIXON, JEAN R. HOMERE, and JAY P. LUCAS,  
*Administrative Patent Judges.*

DIXON, *Administrative Patent Judge.*

DECISION ON APPEAL

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

## I. STATEMENT OF THE CASE

A Patent Examiner rejected claims 1-20, 22-33, and 35. Claims 21 and 34 have been canceled. The Appellant appeals the rejected claims under 35 U.S.C. § 134(a). We have jurisdiction under 35 U.S.C. § 6(b).  
We AFFIRM.

### *Invention*

The invention at issue on appeal relates to a routing topology that reduces signal interference while minimizing the number of pins required on a connector. (Spec. 4).

### *Illustrative Claim*

Claim 1, which further illustrates the invention, follows.

1. A circuit card comprising:

a circuit element supported by the circuit card, the circuit element having a plurality of inputs and outputs;

a plurality of signal lines supported by the circuit card, each signal line being electrically connected respectively to one of said plurality of inputs or one of said plurality of outputs; and

a plurality of shields supported by the circuit card;

wherein said signal lines are grouped in a plurality of adjacent corresponding pairs, a shield being located respectively on each side of each of said plurality of corresponding pairs of said signal lines.

### *References*

The Examiner relies on the following references as evidence:

Chin	6,216,205 B1	Apr. 10, 2001
Elabd	6,526,462 B1	Feb. 25, 2003 (filed Nov. 19, 1999)
Ortega	6,527,587 B1	Mar. 4, 2003 (filed Apr. 29, 1999)
Robertson	6,658,530 B1	Dec. 2, 2003 (filed Oct. 12, 2000)
Appellant' Admitted Prior Art ("AAPA") (Spec. 2, Fig. 3)		

### *Rejections*

The Examiner rejects the claims in this appeal as follows.

Claims 1-2, 5-9, 11-12, 14-16, 18-20, 24, 26-27, 29-31, and 33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Robertson in view of AAPA.

We note that Appellant has identified independent claims 1, 6, 8, 11, 15, 18, 19, 26, 30, and 33 that are on appeal. (App. Br. 3). Since Appellant has not separately argued each of the independent claims, and Appellant's arguments have treated all independent claims as a single group which stand or fall together, we select claim 1 as the representative claim for this group. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Dependent claims 3 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Robertson in view of AAPA, and further in view of Chin.

Dependent claims 4, 10, 13, 17, 23, 28, 32, and 35 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Robertson in view of AAPA, and further in view of Ortega.

Dependent claim 25 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Robertson in view of AAPA, and further in view of Elabd.

Since Appellant does not separately argue the merits of the cited references Chin, Ortega, and Elabd, the potential arguments regarding those references are considered waived by Appellant. Thus, dependent claims 3-4, 10, 13, 17, 22-23, 25, 28, 32, and 35 are treated as standing or falling together with respect to the independent claims. *See* 37 C.F.R. § 41.37(c)(1)(vii).

## II. ISSUES

Has Appellant shown that the Examiner erred in finding that the proffered combination of references teaches or fairly suggests “a shield being located respectively on each side of each of said plurality of corresponding pairs of said signal lines,” as recited independent claim 1? (App. Br. 9; Reply Br. 4).

## III. PRINCIPLES OF LAW

### *Prima Facie Case of Unpatentability*

The allocation of burdens requires that the USPTO produce the factual basis for its rejection of an application under 35 U.S.C. §§ 102 and 103. *In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984) (citing *In re Warner*, 379 F.2d 1011, 1016 (CCPA 1967)). The one who bears the initial burden of

presenting a prima facie case of unpatentability is the Examiner. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). Appellant has the opportunity on appeal to the Board to demonstrate error in the Examiner's position. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006).

### *Claim Interpretation*

During prosecution before the USPTO, claims are to be given their broadest reasonable interpretation, and the scope of a claim cannot be narrowed by reading disclosed limitations into the claim. *See In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

“Giving claims their broadest reasonable construction ‘serves the public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified.’” *In re American Academy of Science Tech Center*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (quoting *In re Yamamoto*, 740 F.2d 1569, 1571 (Fed. Cir. 1984)). “Construing claims broadly during prosecution is not unfair to the applicant . . . because the applicant has the opportunity to amend the claims to obtain more precise claim coverage.” *Id.*

### *35 U.S.C. § 103(a)*

In rejecting claims under 35 U.S.C. § 103, “[w]hat matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under § 103.” *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 419 (2007). To be nonobvious, an improvement must be “more than the

predictable use of prior art elements according to their established functions.” *Id.* at 417.

In *KSR*, the Supreme Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art" (*id.* at 415), and discussed circumstances in which a patent might be determined to be obvious. *Id.* at 415-16 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 12, 17-18 (1966)). “If a person of ordinary skill in the art can implement a predictable variation, [and would see the benefit of doing so,] § 103 likely bars its patentability.” *Id.* at 417.

The Federal Circuit recently recognized that "[a]n obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of a case. Indeed, the common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not." *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 416). The Federal Circuit relied in part on the fact that Leapfrog had presented no evidence that the inclusion of a reader in the combined device was “uniquely challenging or difficult for one of ordinary skill in the art” or “represented an unobvious step over the prior art.” *Id.* at 1162 (citing *KSR*, 550 U.S. at 418-19).

#### IV. FINDINGS OF FACT

In our analysis *infra*, we will rely on the following findings of fact (FF) that are supported by a preponderance of the evidence.

*Robertson*

1. Robertson discloses a high performance memory module having ground pins between each pair of signal pins to reduce signal interference, or cross-talk (Abstract, col. 3, ll. 60-67, col. 4, ll. 66-67, Fig. 1A).

2. Robertson also discloses that the ground pins 106 provide a low resistance path for return currents from the memory module. The ground pins 106 which connected the PCB 101 (supported) located between at least two signal pins 104 for further reducing signal cross-talk (col. 3, ll. 60-67, Fig. 3).

3. AAPA discloses that “[a] ground shield 60 is provided on each side of the signal lines . . . . [T]he pins 62 of connector 52 would be alternating between a signal line and ground, i.e., signal B0, ground, signal B1, ground, signal B2, ground, etc. as illustrated in Fig. 3.” (Spec. 3, Fig. 3).

## V. ANALYSIS

From our review of the Examiner’s stated rejections, we find that the Examiner set forth a detailed explanation of the rejection. We find the Examiner’s showing to set forth a *prima facie* case of obviousness. Therefore, we look to Appellant’s Briefs to show error in the proffered *prima facie* case.

Appellant has elected to argue claims 1-2, 5-9, 11-12, 14-16, 18-20, 24, 26, 27, 29-31, and 33 together as a group. (App. Br. 9). Therefore, we select independent claim 1 as the representative claim for this group and will address Appellant’s arguments with respect thereto.



With respect to representative independent claim 1, Appellant contends that “there is no motivation or suggestion to combine Robertson with the AAPA.” (App. Br. 13). According to Appellant, the AAPA teaches that a shield extends the length of one signal line to reduce the signal cross-talk (*id.*) and Robertson teaches using “ground pins to improve signal integrity by minimizing cross-talk between signal pins.” (*Id.* at 12). Appellant further contends “there is no teaching or suggestion within any of the references that provide a motivation to combine them.” (*Id.* at 15).

We disagree with Appellant’s contentions. We find that Robertson is cited to teach providing shields via ground pins for a pair of signal pins to reduce the signal cross-talk, but the ground pins do not extend along the signal lines (FF 1). We further find that AAPA teaches that ground shields along signal lines and their corresponding ground pins are arranged alternating between each signal line (FF 3). “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 550 U.S. at 416. The operative question in this “functional approach” is thus “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.* at 417. In the instant case, the combination of extended ground shields of the AAPA and arrangement of the ground pins of Robertson yields a predictable use of these two concepts to reduce the cross-talk between a pair of signal lines. The combination of Robertson and AAPA is “a design step well within the grasp of a person of ordinary skill in the relevant art” and the benefit of doing so would be obvious. *Id.* at 427.

Appellant further contends that Robertson teaches away from its combination with the AAPA because 1) Robertson teaches reducing cross-talk between groups of single pins but does not teach shielding the signal lines on the card; 2) the ground pin 106 of Robertson is located as part of the connector 102 not supported by the circuit card while the ground pins of AAPA are supported by the circuit card 54; and 3) Robertson's ground pins provide a low resistance path for return currents from the memory module while the shields of AAPA on the card provide a coupling path from the signal lines to ground (App. Br. 15-16). In addition, Appellant contends that "one of ordinary skill in the art would not be motivated to *unnecessarily*, according to Robertson, increase circuit board complexity and manufacturing cost by adding grounded traces along a the entire length of the signal traces." (Reply Br. 5).

We disagree with Appellant's contentions. Even though the location of ground pins or the effects and manners of reducing the cross-talk may vary from Robertson and AAPA, it is our reasoned conclusion that Robertson is not a reference teaching away from the claimed invention. First, Appellant only provides a subjective view of "unnecessarily" combining Robertson and AAPA, we do not find and Appellant has not identified any express or implied teachings in the disclosure of Robertson for criticizing, discrediting or otherwise discouraging the solution claimed. Furthermore, Robertson's teaching of the arrangement of ground pins is simply one way to reduce the cross-talk between the signal lines and pins (FF 2). Appellant has not presented any evidence that the ground pin scheme of Robertson cannot be used in the environment of AAPA.

Finally, contrary to Appellant' arguments concerning "teaching away," we find the Examiner's position to be reasonable that "implement shields that extend the entire length the signal [lines] to the circuit card and supported by the circuit card as taught by AAPA in the system of Robertson to reduce cross-talk along the entire signal lines" (Ans. 4).

In the interest of completeness, we have also considered whether Robertson, taken alone, teaches all limitations of the independent claim 1. The claim language "shield" could be interpreted as something reducing signal interference or cross-talk. Robertson's ground pins function as the shields which are supported by the circuit card (PCB) (FF 2). In addition, the claim language "a shield being located respectively on each side of . . . signal lines" does not necessarily mean that the shield is located along entire path of the signal lines; we find that the claim language is also broad enough that the shields can be located on the ends of the pair of signal lines as taught by Robertson. Robertson's ground pins form a low path of resistance for return currents from the circuit card and are located between at least two signal pins that are the ends of the signal lines (FF 2) so that the ground pins are located on each side of a pair of the signal lines under our broadest yet reasonable claim interpretation. Thus, using this alternative interpretation of the claimed invention, it is our reasoned view that Robertson, taken alone, teaches all limitations of the independent claim 1.

Hence, we agree with the Examiner that claim 1 is unpatentable over Robertson in view of AAPA. Therefore, Appellant has failed to show that the Examiner erred in finding that the prior arts teaches or fairly suggests the claimed language in independent claim 1.

Accordingly, we sustain the Examiner's § 103(a) rejection of claims 1-2, 5-9, 11-12, 14-16, 18-20, 24, 26-27, 29-31, and 33. Dependent claims 3-4, 10, 13, 17, 22-23, 25, 28, 32, and 35 fall with their base claims. 37 C.F.R. § 41.37(c)(1)(vii) (2007). *See also In re Nielson*, 816 F.2d 1567, 1572 (Fed. Cir. 1987).

## VI. CONCLUSION

For the aforementioned reasons, we conclude that Appellant has not shown that the Examiner erred in finding that the proffered combination of references teaches or fairly suggests “a shield being located respectively on each side of each of said plurality of corresponding pairs of said signal lines” as required in the independent claim 1.

## VII. ORDER

We affirm the obviousness rejections of claims 1-20, 22-33, and 35.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

msc

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